

(version 1.0, created Tuesday, 5 May 2022 by Bruce P. Johnson - KX4AZ)

N1D/4 This pdf consists of three parts:

- 1) A **general summary** for the *entire* 10 day period (April 21 - May 1, 2022) the special event N1D/4 WSPR beacon was operated
- 2) The **entire collection of daily summaries** posted by KX4AZ at the Athens Radio Club groups.io site. Note, the formatting in this section is rather “wonky”, owing to the simple copy/paste used to assemble it.
- 3) A set of **Frequently Asked Questions** (FAQ) compiled at the conclusion of the 10 day period.

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## General Summary for the 10 days of special event WSPR beacon ‘N1D/4’

A total of 1155 sites uploaded spots of the N1D/4 beacon during its ~10 days of operation (April 21 - May 1), on the HF bands (80/40/30/20/17/15/12/10m). The table below summarizes the spotter outcome for each band/day combination.

Day (begin at noon local time)	WSPR Band(m)	Power Output (W)	Worldwide Spotters	GA spotters
Thursday, April 21	40	0.2	151	7
Friday April 22	10	0.5	23	1
Saturday, April 23	12	0.5	33	1
Sunday, April 24	15	0.5	48	0
Monday, April 25	17	0.2	93	1
Tuesday, April 26	20	0.2	282	3
Wednesday, April 27	30	0.2	242	4
Thursday, April 28	40	0.2	151	6
Friday, April 29	80	0.5 & 5.0	110	7
Saturday, April 30	30	0.2	193	6

The *long distance record* was for **VK5ADE**, in the Adelaide, Australia area, at 16,203 km, or 10,068 miles, on the 20m band. A station on the coast of Antarctica (**DPOGVN & DPOGVN/1**; German research facility) was the most *unusual* location, spotting the beacon several times on the 30 & 40 meter bands:



The ***entire*** collection of *daily* summaries...

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## Posted April 21...

OK, the special event WSPR beacon N1D/4 is now active (100% duty cycle), planning on about 24 hours for each HF band, with the (tentative) schedule show in the table below, culminating at the stadium site on the 30th. Will be changing the WSPR band just once per day around noon local, when I adjust the Super Antenna coil to resonance and swap out the USB battery...a difficult job, requiring about 2 minutes of effort. Snapshot of the Super Antenna clamped to fence attached - currently guarded by a white rat.

The N1D/4 WSPR signal ought to be receivable in the Athens area, and last night reached as far away as Antarctica, Australia, and Europe. I have also confirmed a solid signal on 40 meters today at the KU4SD SDR, a bit over 6 miles distant. Even if you've never dabbled with WSPR I'd strongly encourage you to fire up the WSJT-x software (WSPR mode is built in), click the "upload spots", and let's see how well the HF ground wave reaches in these parts. I'll keep track of the daily spots and update this thread with the results/maps etc, including any *local* spots - so this is your chance for fame and fortune!

Schedule as of 21 April 2022...subject to revision!

Call sign	Band(m)	Commence at Noon Local (EDT)	Power Output (W)	Xmitter Site
N1D/4	40	Thursday, April 21	0.2	KX4AZ
N1D/4	10	Friday April 22	0.5	KX4AZ
N1D/4	12	Saturday, April 23	0.5	KX4AZ
N1D/4	15	Sunday, April 24	0.5	KX4AZ
N1D/4	17	Monday, April 25	0.2	KX4AZ
N1D/4	20	Tuesday, April 26	0.2	KX4AZ
N1D/4	30	Wednesday, April 27	0.2	KX4AZ
N1D/4	40	Thursday, April 28	0.2	KX4AZ
N1D/4	80	Friday, April 29	0.5	KX4AZ
N1D/4	30	Saturday, April 30	0.2	UGA, Stadium Gate





Super Antenna configured for 40m beacon operation; with the fence serving as

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the ground counterpoise.

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**Posted Apr 22...**

(cross posting this on multiple groups.io - so if you're seeing this info a few too many times, you can either a) wait it out, there will only be *9 more* daily updates like this, b) mute the topic and move on with your life, or c) send me a complaint email, to which the reply may be "sorry, but...")

### **N1D/4 WSPR Beacon Report For "24 on 40"**

Mr. Sprague Dawley did a great job of protecting the N1D/4 antenna, reporting zero squirrel, bird, or fire ant intrusions. For 24 hours run time, the N1D/4 beacon was spotted by 151 stations *worldwide* (Earth Day!), the furthest being HB9TMC in Switzerland. Not quite as spectacular as Antarctica and Australia, reached during the "soft opening" phase the previous day, but who's gonna complain? Here in Georgia, I was delighted to see that seven *radio-active* hams uploaded spots, from these call signs (total spots): KM4QXW (353), KY4RJP (102), N4KGO (101), KD4APP (45), KF4AQO (17), KR4OS (4), and WC4Y (1). Aside from that, if you are set up for WSPR spotting, this is a *unique opportunity* to assess the incoming noise levels on your antenna/receiver setup, by comparing your total spot counts and maps to other stations in the same general region, when receiving for the same time period. There are seldom more than 2 WSPR spotter sites active in GA at the same time on a single band like they are for the next week - so *carpe diem*, I say to you. For that matter, this would also be an excellent time to try *transmitting* in WSPR mode...see how well you are "getting out" with that antenna...and see how well it reaches other GA locations on the same band. But please, please, please don't use more than 5W of RF output, preferably *way less* than a watt. Currently 200mW is the most popular output level in the "WSPR world". Or play "radio limbo" - I've had spots from as low as 10 microwatts RF output, a whole 'nother story.

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## Onward and Upward, to the Heights of 10 Meters...

The 10 meter N1D/4 beacon is now active, through noon tomorrow (Saturday)...so make sure you join the spotter party, and latecomers are always welcomed. While writing this update I noticed that at 12:02 PM the 10m beacon has already been spotted by a station in the Canary Islands. The power output will be a bit higher (0.5W versus 0.2W) for the 10/12/15/80m bands, since I need to enlist an ICOM 7300 for those situations. A little known secret is that a "0% power" setting on an ICOM 7300 yields very close to 500mW output.

## Final editorial comments...

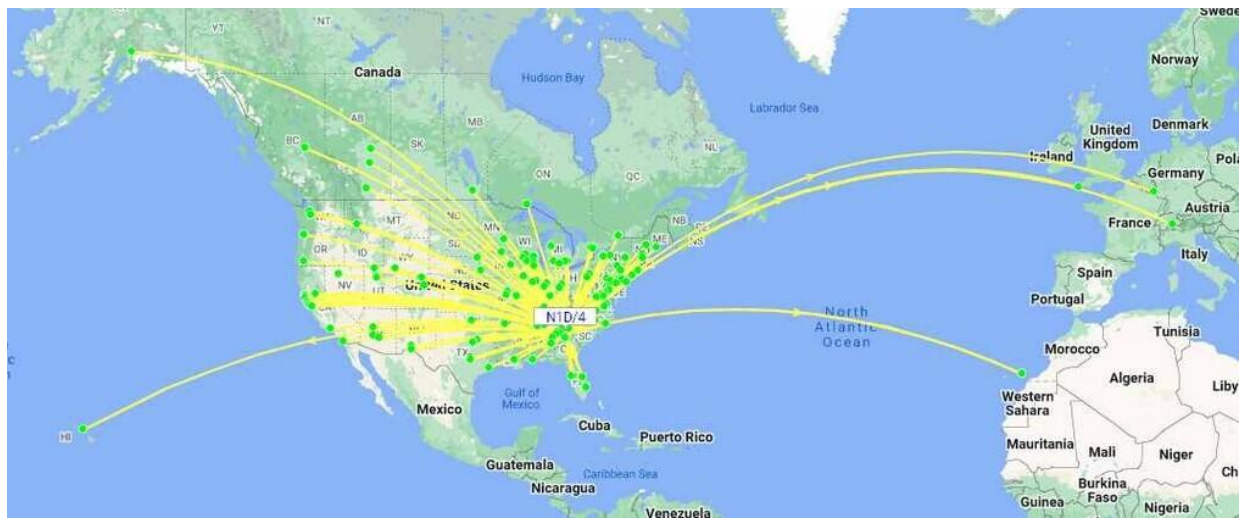
1. Even if your antenna is not "built" for the (insert # here) meter band - just DO IT. For several quite sound technical reasons that I won't delve into, the S/N from a non-resonant, *receive* only antenna is often not much different than with the "correct" band antenna. Different story for *transmission*.
  2. You DO NOT need to have HF privileges to be a WSPR spotter. You can receive and spot to your heart's content on *any* band. Just need to enter a call sign/location into the software to make it into the WSPR database....for posterity. Nobody is going to interrogate you for *uploading* spots from 80/40/30/20/15/12 meters with technician class license privileges.
  3. Don't forget to mark April 30/May 1 on your calendars for the *main event* - two-way SSB contacts with the folks who will be set up at Sanford Stadium (please see N1D at qrz.com for more information).
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(spotter maps for the 40m WSPR beacon)

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**Posted Apr 23**

(cross posting this on several groups.io forums in the north Georgia region)

### **N1D/4 WSPR Beacon Report For “24 on 10”**

Brevity is **not** my strength when it comes to throwing words down onto the screen, so what follows is a “blow by blow” account, that’ll either have you spellbound, sitting on the edge of your seat.....OR remind you of the time you sat in a chair in full sun and watched a wall of dull gray paint dry on a hot July afternoon. With a parade of fire ants climbing up the legs of said chair. But I digress. Mr. Dawley, the loyal white rat continued to guard the Super Antenna as it was re-tuned for 10 meters, and the ICOM 7300 was powered up for the mighty 0.5 watt output, using the “0% RF Power” setting & WSJT-x to tell it what & when. Just after noon local time the first spot came rolling in, from EA8/DFUE, in the Canary Islands, off the coast of Africa. Yay! What a perfect start, from so far away! Then.....nothing. No more spots rolled in as more than an hour passed by. By 1:45 PM your humble narrator began to get antsy....where are the spots? By 2 PM, I threw out one of my “rules” about this venture, that of ONLY using the basic Super Antenna clamped to a metal fence for the duration. While rationalizing my actions with thoughts like “...a ham has always got to be flexible, and adapt to new realities”, I reached for the PL-259 antenna connector. Cue an old “earworm” tune by Devo....” 🎵...when a problem comes along, you must whip it... 🎵.”. Then I swapped it out for the connector from the EFHW 80-10 antenna, to add a bit of a “boost” to the 10m spot possibilities. Another hour goes by....still nothing more than that single “chirp” from the Canary Islands. What in the world is going on? Has there been another X-class solar flare to knock out the HF propagation? Did Mr. Dawley get miffed about losing his guard job at the Super Antenna and let the squirrels chew the RG-8x off the EFHW transformer? Check solarham.net....nope, things look OK, with some crackling on the sun, but nothing strong

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enough to blot out HF. By 4 PM I had fielded a couple of “are you running it on 10 meters today?” emails. Surely if it reached the Canary Islands there are other spotters out there! By 5:20 PM, still nothing...I went back to the PC/ICOM 7300 setup, almost ready to break another “rule”, this time about not going above the “0% RF” setting on the rig. Just before my hand reached the power setting dial I decided to check the WSJT-x software. Hiding behind an open Chrome browser window on the PC was the dreaded “windows sound card error” box. Ahhhhhhhhhh.... *that’s* the problem! PC rebooted and WSJT-x restarted, and by 5:28 PM Eastern the spots started pouring in, primarily from the west coast of the US. So the spotter record has about a five hour gap in the afternoon, where the N1D/4 beacon was likely missing in action. Nevertheless, for the *actual* 19 hours run time, the N1D/4 beacon was spotted by 23 stations worldwide, the furthest being VK5MR/P in Australia. As the map illustrates, the band was VERY “long”, as one would expect for 10 meters. In the US, Arizona was the only non-coastal state to spot N1D/4. But wait, what’s this, there’s a *local* spot from Athens? Yes, let the record show that the N1D/4 beacon was spotted on 10m *locally* by station KX4AZ, from the very same EM83hw grid box, roughly 40 feet distant from the N1D/4 transmitter, at my kitchen table. Using one of the cheap “RTL-SDR 25-1700 MHz” dongles. By “cheap”, I mean one of the “\$13 from Aliexpress w/free (1.5 month duration) shipping, no direct sampling ability without soldering wires to the A/D chip, no TCXO, an MCX antenna connector, and blue plastic enclosure” RTL-SDR dongles. But plenty good for a “hyper-local” spot, when connected to a stubby antenna resonant at about 1000 MHz, half buried under a sleeping cat, with the RF gain set to 0 dB. There just *had* to be one station spotting the 10m beacon from the Peach State, after all! And no matter what the hardware, power, or mode used, any time RF energy passes *invisibly* through the ether, from Point A to B, it’s *pure magic* to me. OK, even that (pompous and glib) statement has an exception - the crackling power pole(s) in my neighborhood take away from some of that magic now and then.

### **Cruising down the band, to 12 Meters...**

The 12 meter N1D/4 beacon is now active, through noon tomorrow (Sunday)...so make sure you join the “spotter party”, and this time I’ll make every effort to ensure a Windows 10

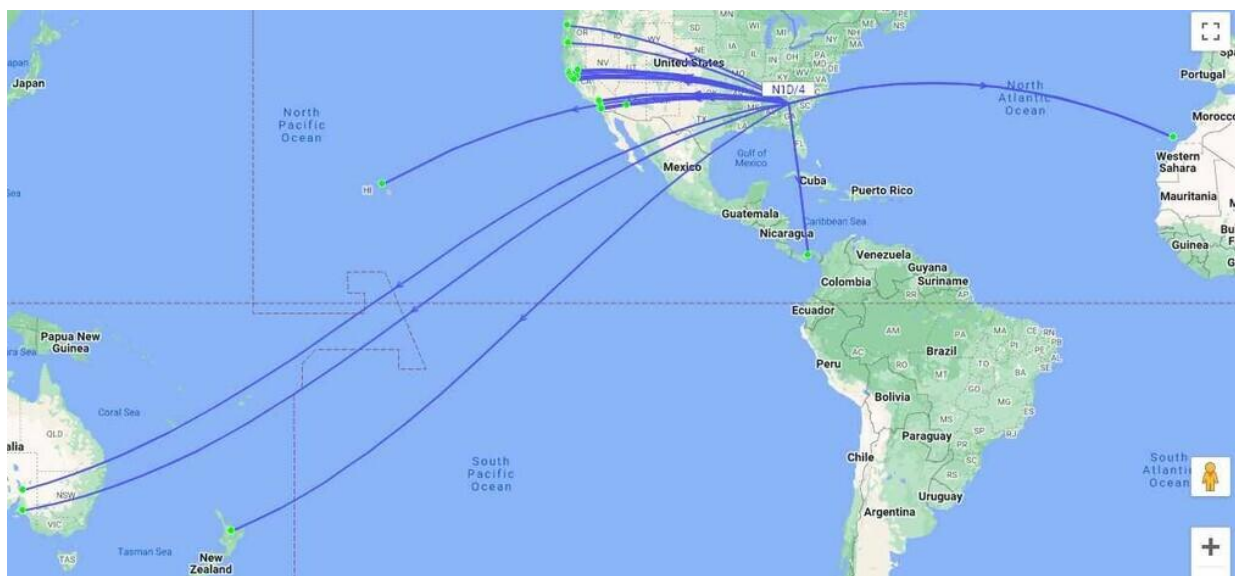
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sound card error doesn't throw me into a spotless tizzy again. We would expect 12 meters to be similarly "long" as 10 meters....but perhaps an Athens/Atlanta area ham will snatch the *local* wave field. The power output continues at 0.5W, returning to the (re-tuned for 12m) Super Antenna, in order to give Mr. Sprague Dawley his guard job back...unless I change my "rules" again.

### Closing comment...

Today (Saturday) marks just 7 days away from the Main Event at the stadium in Athens, with 2-WAY SSB communications on tap. N1D event details at [qrz.com](http://qrz.com).





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**Posted Apr 24**

*Remaining WSPR beacon schedule as of 24 April 2022...subject to revision.*

Call sign	Band(m)	Commence at Noon Local (EDT)	Power Output (W)	Xmitter Site
N1D/4	15	Sunday, April 24	0.5	KX4AZ
N1D/4	17	Monday, April 25	0.2	KX4AZ
N1D/4	20	Tuesday, April 26	0.2	KX4AZ
N1D/4	30	Wednesday, April 27	0.2	KX4AZ
N1D/4	40	Thursday, April 28	0.2	KX4AZ
N1D/4	80	Friday, April 29	0.5	KX4AZ
N1D/4	30	Saturday, April 30	0.2	UGA, Stadium Gate 1

### **N1D/4 WSPR Beacon Summary For “24h on 12m”**

In contrast to the 10 meter “meltdown” I detailed ad nauseum in yesterday’s summary, the 12 meter beacon spots commenced *immediately upon startup* at noon, and streamed in

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throughout the afternoon. In fact, the volume of the N1D/4 spots was enough to send me outdoors to make sure I hadn't accidentally left the EFHW connected (previously used for 10 meters). But even though Sprague (we're on a first name basis now) had relocated from the fencepost to the ground next to the chain link fence, he assured me that the RG-8x was truly connected to the modest little center loaded Super Antenna about 4 ft. above him. I told him to be careful on the ground; you never know when Uga X might come wandering by! Long after sunset here in the Classic City, the spot curtain finally closed for the night at the (legendary) AI6VN/KH6 station, way out there in Hawaii. I say legendary because a) the receiver/antenna/noise floor combo at that QTH leads to WSPR spotting that places it high up in spotter rankings, and b) the operator is also the author of the Linux-based software 'wsprdaemon', used by almost all of the "big guns" of the WSPR spotting world. If this is starting to sound a bit like "radio sport", yeah, I suppose it might be a form of that. This morning, the two competing EA8 stations in the Canary Islands opened the day when they spotted N1D/4. Well actually, KX4AZ snuck in a "hyper-local" spot once again, just *minutes before* the EA8 folks got rolling. For that spot, I needed to plug in the fancy, *high end* "\$30 RTL-SDR v3" dongle into the laptop, with the "Q branch direct sampling mode" enabled. Those of you that have tinkered with these dongles will immediately recognize that the direct sampling mode was necessary, now that we've dipped below the typical 25 MHz limit for tuning the higher frequencies with it's mixer. The RTL-SDR antenna consisted of a wire dipole of about three inches length per leg, suspended in free air about 3 feet AFL (above *floor* level). The feedline consisted of.....there was no feedline.....unless you count it as the BNC-SMA adapter used to connect the dongle to the dipole antenna wires. But there I go again, digressing and tossing brevity out the window. For the 24 hours run time, the N1D/4 beacon on 12m was spotted by 33 stations worldwide (see attached map), the furthest being OE3XOE in Austria. As the map vividly illustrates, the 12m band was VERY "long", as one might expect. In the US, New Mexico (WA5DJJ) was the closest spotter state (ignoring "hyper-local" KX4AZ in the Peach State).

**Another step...to a *lower* frequency and the *soothing* waves of 15 Meters...**

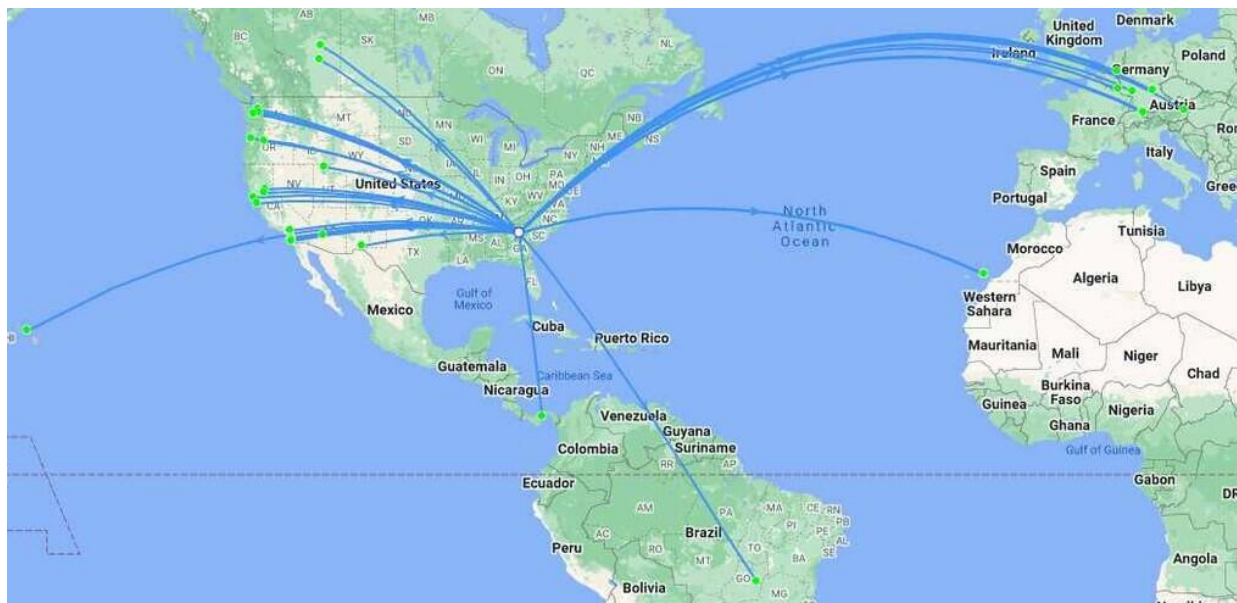
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The 15 meter N1D/4 beacon (0.5 watts) is now running, through noon local tomorrow (Monday)...so power up that rig/software and join the “spotter party”. The distance to the closest spot ought to continue shrinking each day now....for 12 meters it was in New Mexico....so what will it be for 15 meters? Perhaps an Athens/Atlanta area ham will snatch the *local* wave field today. Even if you previously signed a DPP (*digital purity pledge*, i.e. “I promise that I will never, *ever* make use of any of the digital modes!”), I don’t consider WSPR *receiving* to be a violation of that promise. You have permission.

### Closing comment...

Only *days* remain until the Main Event at the stadium in Athens, with those beautiful *analog*, *QSL-card-friendly*, 2-WAY SSB communications. N1D event details at [qrz.com](http://qrz.com).





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**Posted April 25**

*Remaining WSPR beacon schedule as of 25 April 2022...*

Call sign	Band(m)	Commence at Noon Local (EDT)	Power Output (W)	Xmitter Site
N1D/4	17	Monday, April 25	0.2	KX4AZ
N1D/4	20	Tuesday, April 26	0.2	KX4AZ
N1D/4	30	Wednesday, April 27	0.2	KX4AZ
N1D/4	40	Thursday, April 28	0.2	KX4AZ
N1D/4	80	Friday, April 29	0.5	KX4AZ
N1D/4	30	Saturday, April 30	0.2	Sanford Stadium, Gate 1

#### **N1D/4 WSPR Beacon Summary For “24h running down the 15m line”**

The 15 meter beacon receptions for N1D/4 ran down the internet field immediately upon *kickoff time* at noon, finally being thrown *coast to coast*, when AC1LL in Maine caught some of the waves. And we touched down in Kansas, too, thanks to NK0Z, who *almost* won the prize for the *closest spotter*....but wide receiver KG5ZDA near Dallas, TX snuck in there this morning to intercept a pass and capture the prize. This time I resisted the temptation to plug an RTL-SDR dongle in and put another 40 foot, hyper-local reception pass in there...to give



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the Athens area folks a fair shot at the catch. For the 24 hours run time, the N1D/4 beacon passes on 15m were received by 48 station sites, from central Brazil to northern UK (see attached map), the furthest being IW2NKE in Italy. As the map illustrates, the 15m band was still VERY “long”, but definitely shorter than 12m.

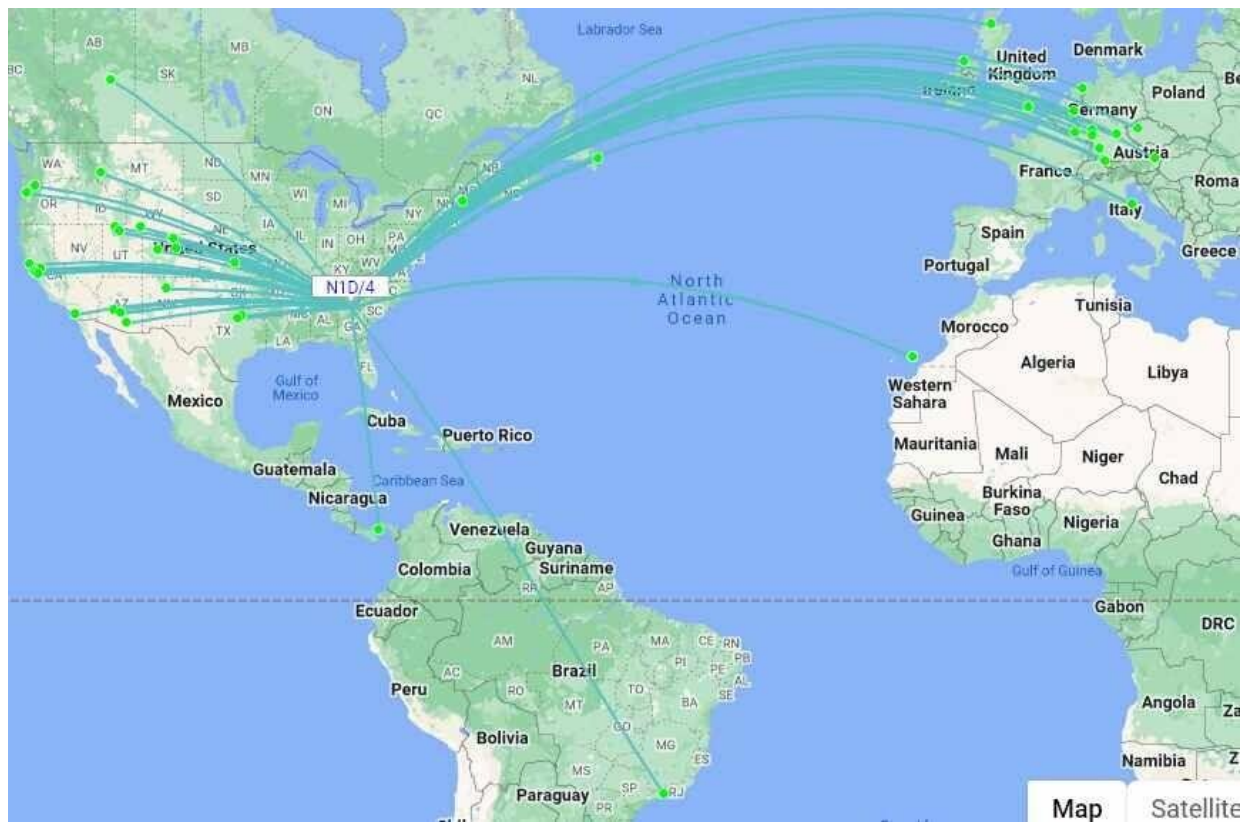
### **Another push down the (radio) field, to the 17 meter line...**

The 17 meter N1D/4 beacon (0.2 watts) is now sending out electromagnetic radiation to the world, through noon local time tomorrow (Tuesday). If you’ve been paying close attention to the power levels, you may have noticed the drop from yesterday’s 0.5 watt level. That’s because the 17/20/30/40m bands will all be covered by a standalone Zachtek transmitter (outdoors, fire ants permitting), with a 0.2W output. Isaac the ICOM 7300 is resting now, after several days of 0.5W beacon duty for the 10/12/15m bands. Isaac will have one last return as the WSPR quarterback on Friday afternoon, for an 80m NVIS beacon blowout that’ll blanket the Peach State. So power up those WSPR receivers and join the “spotter party” *today*. Perhaps some Athens/Atlanta area hams will yet catch some *local* WSPR passes on 17m today. Don’t forget, the special N1D/4 beacon leaves us *forever* in less than a week, so don’t miss this opportunity to get your call sign into the *permanent* WSPR spot database. Centuries from now, your ancestors will be able to look up your call sign and see that you spotted the N1D/4 beacon, during its brief flickering existence in the spring of 2022.

### **And one last comment...**

Now just *days* remain until the radio mayhem at Sanford Stadium, with those smooth *analog*, *QSL-card-generating*, 2-WAY SSB communications. N1D event details at [qrz.com](http://qrz.com).

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**Posted April 26**

*Remaining WSPR beacon schedule as of 26 April 2022...*

Call sign	Band(m)	Commence at Noon Local (EDT)	Power Output (W)	Xmitter Site
N1D/4	20	Tuesday, April 26	0.2	KX4AZ
N1D/4	30	Wednesday, April 27	0.2	KX4AZ
N1D/4	40	Thursday, April 28	0.2	KX4AZ
N1D/4	80	Friday, April 29	0.5	KX4AZ
N1D/4	30	Saturday, April 30	0.2	Sanford Stadium, Gate 1

#### **N1D/4 WSPR Beacon Summary For “24h on 17m ” - soft opening & database drama**

The wspr.rocks site gave me a jolt this morning when I discovered there were *no spots after 8:16 PM* last night. But later in the morning they posted a message about a database error - no spots have been “lost” - just needed to use [wspr.vk7jj.com](https://wspr.vk7jj.com) to view them. Whew! So with that we’ll soldier on, and summarize the outcome for the 17 meter N1D/4 beacon. But first, yet another long (and tedious) digression. The story begins with the surprise arrival of a long (5.8 meter) telescopic whip antenna from an Aliexpress seller - ordered on a whim

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earlier this month when I read about someone using it to reduce the need for a loading coil on the Super Antenna. In other words, this metallic wonder can function *as is* for a quarter wave vertical antenna on the 20m and higher frequencies. And on the *lower* frequencies such as 80/40/30m it'll reduce the amount of the loading coil needed for the Super Antenna, effectively raising the height of the radiator. By yesterday morning the gears had turned enough in my head to realize that I should just set up the new metal whip on the ground and adjust it for a quarter wave antenna on the 17m band. In switching between that and the (center loaded) Super Antenna clamped to the fence it did appear that the plain vertical whip won out, so I went with that for most of the 24 hours. Sprague the *radio rat* relocated to make sure it didn't tip over, and also kept the squirrels away from the radial wires. And at long last we had a *true local spot* - KU4SD in Jackson county (about 6 miles to the northwest) reported a consistent and strong signal from N1D/4. For the 24 hours on 17m, the N1D/4 beacon was spotted by 93 stations, including "down under" (see attached map), the furthest being VK4CT in Australia. As the map illustrates, the 17m band was still quite "long", and except for KU4SD, skipping over the Peach State. Sniff.

### **20 meters up and running...**

The 20 meter N1D/4 beacon (0.2 watts) will be active through noon local time tomorrow (Wednesday). The new telescopic whip has been extended to the max, set up as a quarter wave vertical with four ground wires laying on the ground. Make that *five* ground radials if you include the coax feedline shield, also on the ground. With this step to 20m we should start to see ever closer spots showing up...if not the Peach State, then maybe a neighboring one.

### **And a last reminder...**

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Just a handful of *days* remain until the radio festivities at Sanford Stadium kick off, with those zesty *analog*, *QSL-card-sending*, *2-WAY* communications on SSB. N1D event details at [qrz.com](http://qrz.com).







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**Posted April 27**

*Note to readers: should you lose interest in this thread, remember there is always the “mute this topic” button/link available ;>*

***Remaining WSPR beacon schedule as of 27 April 2022...***

Call sign	Band(m)	Commence at ~Noon Local (EDT)	Power Output (W)	Xmitter Site
N1D/4	30	Wednesday, April 27	0.2	KX4AZ
N1D/4	40	Thursday, April 28	0.2	KX4AZ
N1D/4	80	Friday, April 29	0.5	KX4AZ
N1D/4	30	Saturday, April 30	0.2	Sanford Stadium, Gate 1

**N1D/4 WSPR Beacon Summary For “24h on 20m ”** 🎵 *...for everything there is a sig-nal, tune...tune...tune* 🎵

The simple telescopic vertical antenna mentioned in yesterday’s summary proved to be quite the performer with those mighty 200 milliwatts of WSPR power, with 20 meters definitely proving to be “hot”. The outcome eclipsed the results from all the previous days of running

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N1D/4. That simple monopole merits a snapshot attached to this update, in all its (almost fully) extended, braced-with-bricks glory. Looking at the S/N ratios reported by the spotters, even a *1 milliwatt* output (i.e. 0 dBm, 23 dB lower power) would have *still* generated a good number of spots into Europe. The coverage for N1D/4 on 20m ranged from **Tasmania to Turkey, and Alaska to Finland** (map attached). AND...closer to home, through the Georgia pines, several hams caught 20m waves in a bottle, with spots reported by **KU4SD**, **N4GYN**, and **KD4OTA**. They are now written into the “Book of WSPR”. Except for KU4SD in Jackson county, the Athens area hams appear to be clinging to their non-digital pledges, despite the availability of a good local signal.

For the ~24 hours on 20m, the N1D/4 beacon was spotted by **282 stations**, the furthest being **VK5ADE** in Australia. The 20m band didn’t completely skip over the Peach State as on the higher frequencies, as noted in the previous paragraph. Let’s see what’ll happen on 30m...

**30 meters for N1D/4 now running... 🎵there is a mess-age, spot...spot...spot 🎵**

We’re in the home stretch now with the N1D/4 call sign, and the 30 meter beacon (0.2 watts) is now beaming us up, running through noon local time tomorrow (Thursday). The center-loaded Super Antenna is back on the stage, but has been moved from the fence to the same tripod used to hold the quarter wave whip for 20m. During the day I will likely tinker with different whips on top of the loading coil; at the time of this report it is set up with the same extended whip used as a ¼ wave monopole on 20m (snapshot attached). Note the 30m WSPR beacon will make a final “encore” appearance from the stadium on Saturday/Sunday, at the “main event”.

**And don’t forget...**

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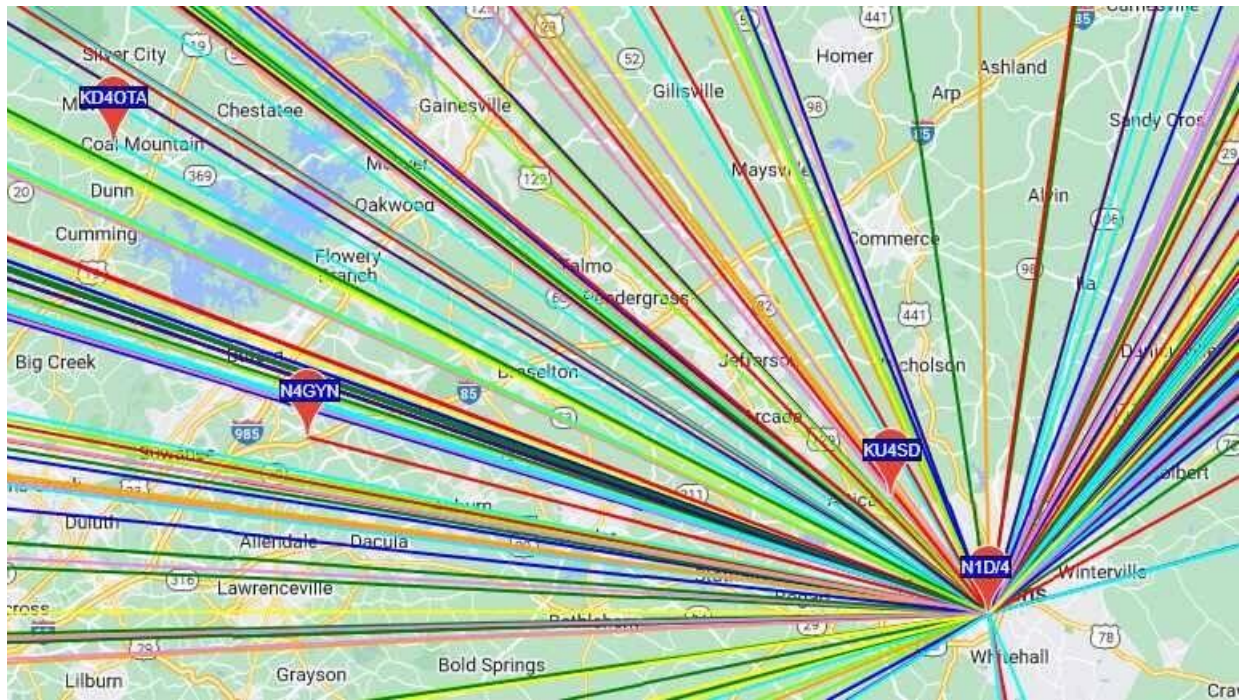
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Only a smidgen of days remain until the *real* main event at Sanford Stadium on Saturday, with those fulfilling *analog, QSL-card-ready, 2-WAY* communications on SSB. N1D event details at [qrz.com](http://qrz.com).

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**Posted April 28**

*(Note to readers: should you reach your tolerance limit for this thread, there is always the "mute this topic" button/link available)*

***Remaining WSPR beacon schedule as of 28 April 2022...***

Call sign	Band(m)	Commence at ~Noon Local (EDT)	Power Output (W)	Xmitter Site
N1D/4	40	Thursday, April 28	0.2	KX4AZ
N1D/4	80	Friday, April 29	0.5	KX4AZ, <b><i>ends 8 AM Saturday</i></b>
N1D/4	30	Saturday, April 30	0.2	Sanford Stadium, Gate 1

**N1D/4 Beacon Summary For "24h on 30m " 🎵...WSPR words of grid squares, let it be... 🎵"**

The Super Antenna base w/coil, topped by the ~17 foot extra long whip, did an excellent job on the 30m band. It was working so well I just *let it be*, rather than do yet another experiment by swapping out that giant whip for the shorter one (~3.5 ft.) that comes with the Super Antenna. I was initially concerned that the extra weight of the long whip might cause the loading coil slider to slip, but it held fast. The coverage for N1D/4 on 30m reached beyond Australia and Europe, to include **DPOGVN/1**, a German research station on the coast of **Antarctica** (map attached). Here in Georgia, *several* hams caught the 30m emanations,

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with spots by **KU4SD**, **K4EH**, **W3DJS** (of HamPi fame), and **N4KGO**. Now for a digression....about the RF power level. According to the database, spotter 'KX4AZ/T' in *rural Michigan* (a location I have some knowledge of ;>), spotted the N1D/4 beacon >500 times during the past day. The strongest signal reports reached the 0 dB range...in other words about 30 dB *more than necessary* for a spot. That means that a power output of a mere 0.2 mW would, given enough time, *still* generate a few spots *711 miles away* from that simple antenna here in Georgia. Even more impressive, the same thing could be said about **EA8BFK** in the Canary Islands, just off the coast of Africa (6507 miles distant). Having experimented a fair amount with super low power levels like 0.2 mW and below, I can confirm that's not "funny math", it really can be done. Which reminds me of that famous quote by Arthur C. Clarke..."Any sufficiently advanced technology is indistinguishable from magic". End of digression.

For the ~24 hours on 30m, the N1D/4 beacon was spotted by **242 stations**, the furthest being **VK5EI** near Adelaide, Australia, a distance of 10,036 miles.

#### **40 meters for N1D/4 now running...**

We're in the final stretch now with the N1D/4 call sign, and the 40 meter beacon (0.2 watts) is active, running through noon local time tomorrow (Friday). This is an encore appearance for 40m, used a week ago on the opening day for N1D/4. That was with the "plain vanilla" Super Antenna clamped to the fence, so it should be interesting to see if the coverage with the "enhanced" setup (17 foot whip, ground mounted w/radials) is any greater.

#### **And don't forget...**

Just two days remain until the main event at Sanford Stadium on Saturday, with those long awaited *analog*, *QSL-card-mailing*, *2-WAY* communications on SSB. N1D event details at [qrz.com](http://qrz.com).

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**Posted April 29**

*“To different minds, the same world is a hell, and a heaven.”* Ralph Waldo Emerson.

After today there will be just two more of these summaries posted for the N1D/4 beacon, and - depending on your outlook, that’s either a great relief, or a huge disappointment. The N1D call sign turns back into a pumpkin Sunday at 23:59 UTC, so don’t miss your final chances this weekend.

***Remaining WSPR beacon schedule as of 29 April 2022...***

Call sign	Band(m)	Commence at ~Noon Local (EDT)	Power Output (W)	Xmitter Site
N1D/4	80	Friday, April 29	0.5	KX4AZ, Note: <i>ends 8 AM Saturday</i>
N1D/4	30	Saturday, April 30	0.2	Sanford Stadium, Gate 1

#### **N1D/4 Beacon Summary For “24h on 40m”**

As I noted in the previous summary, the 40m WSPR beacon was an “encore appearance”, from the first day on April 21. The performance with the “enhanced” Super Antenna was



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excellent (topped by a ~17 foot extra long whip, on the ground w/radials, rather than clamped to a fence). The coverage for N1D/4 on 40m once again reached beyond Australia and Europe, to include **DP0GVN** on the coast of **Antarctica** (map attached). Here in Georgia, *multiple* stations scooped up the waves, with spots uploaded by **N4KGO, KM4QXW, K4GTR, W3DJS, KO4CRU, and KU4SD**. For the ~24 hours on 40m, the N1D/4 beacon was spotted by **203** stations, the furthest being **VK4CT** in Australia. In comparison, the earlier 40m run (on April 21st) yielded **151** unique station spots, with significantly less coverage into Europe and the northwest US. To be fair, the solar flux index may not have been as high a week ago. A *proper* comparison would be to alternate the antenna configurations within a single day.

### **80 meters for N1D/4 now running...**

As of 12:18 PM local (1618 UTC), the 80 meter beacon (0.5 watts) is now blanketing Georgia's ionospheric ceiling, active until 8 AM local time tomorrow (Saturday). At that point the hardware will be taken down and relocated to the Stadium for its *final* run on 30 meters. The antenna for 80m is the factory default Super Antenna setup with five radials, the *supplementary* 80m coil, followed by the *adjustable* loading coil to tune it, and the standard 3.5 foot whip on top. I reserve the right to increase the RF power above the 0.5 W level, *if* the local Georgia spot coverage seems inadequate by the time we reach sunset. Daytime spots on 80m will be *very* limited. Of course, one nice feature with the WSPR protocol is that a stated power level is *included* in the message, so you'll *know* what the status is by looking up the spot details. Aside from all that, I also have the option to boost the NVIS by switching to the EFHW which covers 80m nicely.

### **And once again...an N1D promotional message**

Now just *24 hours* remain until the N1D main event at Sanford Stadium, with those deeply satisfying *analog, QSL-card-filling-out, 2-WAY voice* communications via SSB. Doesn't matter whether you're a dyed-in-wool Dawgs fan, a Gator Country expat living in "enemy territory", you hum "Rocky Top" in your sleep, you shout "War Eagle" at a puzzled co-worker, OR you're

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a complete and total football *agnostic*...turn those rigs on and *communicate* with some hams in Athens this weekend. N1D event details at [qrz.com](http://qrz.com). They say the special event QSL cards are suitable for framing.



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Posted April 30

***Final WSPR beacon schedule...***

Call sign	Band(m)	Commence at ~Noon Local (EDT)	Power Output (W)	Xmitter Site
N1D/4	30	Saturday, April 30	0.2	Sanford Stadium, Gate 1

**N1D/4 Beacon Summary For “24h on 80m”**

The beacon started out with a *whimper*, and after seeing no spots by 3 PM EDT, I adjusted the power output upward by 10 dB, to a 5 watt “blowtorch” level. And shortly after that, a few spots came in. Well after sunset, I backed the power off to 0.5 watts, and at the same time switched to the EFHW 80-10 antenna, to increase the NVIS effect a bit. The coverage for N1D/4 on 80m reached as far as Italy (map attached). Here in Georgia, *multiple* stations joined in, with spots by **K4GTR, W3DJS, K4HYJ, KR4OS, KO4USQ, KO4CRU, and K4EH**. For the ~24 hours on 80m, the N1D/4 beacon was spotted by **110** stations, the furthest being **IW2NKE** (Italy).

**30 meters for N1D/4 now running at the Stadium...**

The (final) N1D/4 beacon (30 meters, 0.2 watts) is now sending its 200 milliwatts from Gate 1 at Sanford Stadium. The antenna is a “plain vanilla” Super Antenna, with the standard issue 3.5 foot whip on top. The metal fence railing/cable it is clamped to is working well as the counterpoise. Special recognition goes to Ed, **N4ZRA** for providing an extra metal clamp needed to get a good connection to the fence line. Metal railings often have a

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non-conductive coating or anodization, so that extra clamp was crucial to “seal the deal”. Having an ohmmeter handy is also crucial to confirm a solid DC bond - and once again Ed stepped in with a *working* meter, after the test lead on my “free with any purchase at Harbor Freight” meter suddenly came apart(!). But I digress! See if you can “catch” the 30m beacon, for one final WSPR “thrill”. At noon Sunday the curtain comes down, after which I’ll post the last daily summary.

### Today is the BIG event!

The **main event** at Sanford Stadium is now in progress, through noon local time Sunday (1600 UTC)... **with 2-way SSB waves** making their way out of, and *into* the stadium, via Gate 1. Come one, come all, in person or at your rig. Details for N1D at [qrz.com](http://qrz.com)



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**Posted May 1**

### **N1D/4 Beacon Results For “24h on 30m”**

Sanford Stadium proved to be a great location for the 200 milliwatt WSPR transmitter/Super Antenna combo (photo attached - and no, I wasn't lying horizontally!). Sprague Dawley, the “radio rat” also did a nice job of keeping the event visitors from fooling with the antenna during that time...although at 200 mW RF output the hazard is fairly low. For ~21 hours run time on 30m, the N1D/4 beacon was spotted by **193** stations, the furthest being **VK7CMV** (Tasmania, Australia). Here in Georgia, *multiple* stations joined in, with spots by **A15II**, **K4EH**, **KO4USQ**, **KR4OS**, **KU4SD**, and **KX4AZ**. The closest spotter was the notorious KX4AZ site, at a distance of about 2.2 miles as the crow flies...or 14 miles as a turkey vulture might circle & fly. So it's time for one last digression....and yet another S/N “story”. At the KX4AZ site, the reported signal strength reached +12 dB for a while yesterday afternoon, when the background noise was at its lowest. That's a margin of about 42 dB *above* the minimum strength for a WSPR decode. That means that under those conditions, roughly 15 *microwatts* would have still been sufficient for a spot of N1D/4. To put that tiny power in perspective, my nanoVNA antenna analyzer sends out roughly 100 *microwatts* (-10 dBm) of RF energy into the antenna line being tested!

### **Results and Conclusions - A look back at N1D/4 over the past 10 days...**

I'll post a detailed breakdown of the 10 day's beacon results sometime in the next few days, but here is one quick fact: Over the ten days the N1D/4 WSPR beacon was in operation, there were 1154 *unique* station/band spots recorded in the database, from as far away as

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Australia and Antarctica. Those of you who have kept up with these updates have likely realized that 200 milliwatts of RF power is *plenty* to work with in regard to the WSPR mode. In fact, even more fun can be had in the 10 mW and below range, for example with the nanoWSPR project featured in the January issue of QST...albeit with its small typo. in the wiring diagram(!).

## **Acknowledgments**

Many thanks go to my fellow members at the Athens Radio Club for arranging for the N1D special event call sign, and for the assorted hams in Georgia that I've exchanged emails with over the past 10 days. Judging by those emails, a few more WSPR mode "nuts" may have been minted as a result of this. It's but a tiny *niche* in our great big radio tent, but can be quite fascinating, and can't be beat as a means to compare antennas and transceiver setups. Sending a final 'WSPR 73' on this topic and all the best,

Bruce KX4AZ.







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**(end of Section #2)**

## Frequently Asked Questions (FAQ)

**Q: Why did you use 'N1D/4', rather than just 'N1D' for the WSPR beacon call sign?**

Shortly after the **N1D** call sign became active on April 17th I tested a “plain” N1D WSPR beacon with it. Within a few hours I realized something was amiss, with much lower spot counts than with a “standard” 5 or 6 character call sign. Digging deeper, I discovered that only a handful of the older, obscure decoder programs were spotting it. Digging even deeper, I was able to confirm that this is indeed a *bug* in the current software, written into WSJT-x. So while the protocol fully allows the sending AND decoding of a 1x1 call sign, 90% of the current decoder software fails to *upload* spots for a 1x1 call sign. This bug has been reported to the WSJT-x developers, and perhaps a fix will eventually be published. So for this event N1D/4 had to suffice (suggested by **N4JAH**), the ‘4’ symbolizing the region 4 license zone in the US.

**Q: Why do the consecutive decodes for N1D/4 look different....one has the call sign but no location, one has the full location but a bracketed call sign?**

A: The WSPR protocol needs to use a different message “cadence” when a compound call sign like N1D/4 is employed, since all of the information can’t be sent in one message sequence. These are called Type 2 & 3 messages, and contain the full compound call sign & power only, followed by the six character grid location AND a “hash” of the call sign, in order to associate the *full* location with the *full* call sign.

**Q: What’s this about a 160m beacon operated at the close of May 1st, long after the stadium site had been cleared out?**

A: Reminded by **KN4IJM** that the N1D call sign was still active through 2359 UTC on May 1st, and about 30 minutes after mowing the lawn and cracking open a (single) can of an adult beverage (“Florida Man Double India Pale Ale”, by Cigar City Brewing, Tampa, FL - *exercise caution!*), I cobbled together a 160m “Frankenstein antenna” in the backyard. This consisted of the Super Antenna, the supplementary loading coil used to enable 80m, and the normal slider tune coil, all topped off by an 18 foot telescopic whip. Even then, the (sharp) resonance point only dipped down half way into the 160m band, at 1.90 MHz, ~60 kHz above the desired WSPR frequency (1.84 MHz). But being a *Florida man* by that point, I put the ICOM 7300 into the “emergency tuner mode” (SWR tolerated up to 10.0), which allowed for the WSPR transmission at 0.5W, for the last hour or so of the available N1D/4 day. Only a single (local) spotter was obtained (KU4SD), by my *manual intervention* to access the local KiwiSDR receiver operated by KU4SD, putting it into the WSPR spotter mode on 160m.

**Q: What's the story behind Mr. Sprague Dawley, the *radio rat*?**

A: That plastic rat has nothing to do whatsoever with ham radio, so just put it in the pure whimsy category. I recollect I bought that plastic rat about 10 years ago, to tease our housecat Tikvah (who has since gone on to that great catnip field in the sky). Tikvah was not the least bit impressed; he gave it one look and walked right by. I came across that rat recently in an outdoor storage area, and started placing it in the front yard next to some shrubs, moving it a bit each day, just to see if I could get any puzzled neighbors to comment or generate a post on Nextdoor. Nothing! While setting up the special antenna for the WSPR beacon I thought, why not incorporate it into the story, and name him Sprague Dawley. The name is a nod to the breed of docile, albino lab rats used in all manner of scientific studies, as I'm sure some in the audience here recognized.

**Q: Why did/do you write such long and rambling tales about the special WSPR beacon like this, or for that matter, almost *any* topic?**

A: Many reasons, beginning with my former life in the science arena (chemistry) where my writing was more confined to a "just the facts" style, i.e. like Jack Webb in *Dragnet*. Even so, I did manage to slip in some mischievous things over the years in my *technical* writing, which (thankfully) my management and co-workers tolerated. I remember one instance involving a *stability* study for a pharmaceutical substance, exposed to a variety of harsh conditions such as heat, strong acid, etc. One of these conditions I decided to describe simply as "hot Georgia sun". Nobody questioned it at the time, seemingly understanding exactly what I was trying to convey, even though it did not really belong in a *scientific* context. Well, either that or they never read the report(!).

But beyond that, the main reason is, I simply can't stop myself, figuring if I really go off the deep end, somebody will *eventually* rein me in, lock the thread, ban the author etc. I commenced writing a retirement journal the moment I made that "big decision", and that helps to contain most of my ramblings, but still occasionally spills over into a public forum such as at groups.io, as it did for this special WSPR beacon. Lastly, writing is a form of personal *time travel*, giving me a glimpse into the past to see what crazy things I was doing or thinking about....in this case for one of my ham radio adventures. You too can experience this type of "time travel" by reading something like Ben Franklin's autobiography, etc.